

ON THE GROUND . . .

Guided Weapons (continued)

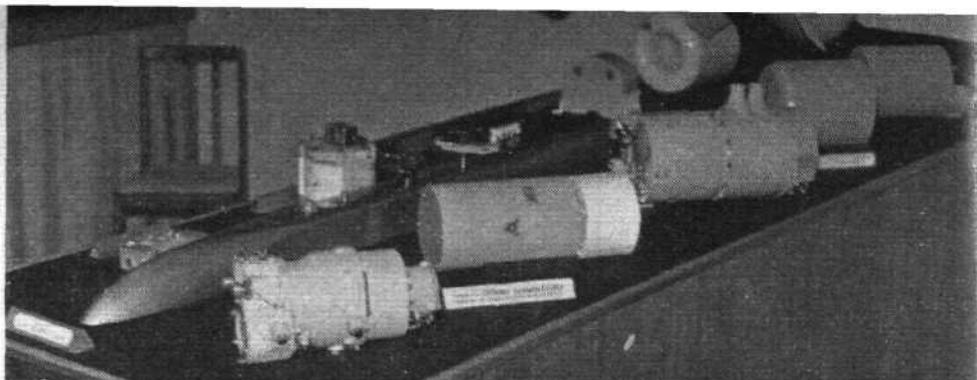
an 800 lb/sq in source) of only 10 lb sq/in.

McMichael One of the most-used British telemetry equipments is this company's Type X1763, consisting of the X1760 transmitter, X1761A oscillator, X9618 voltage unit, and X7770 or 1762 junction box. Up to six sets of data may be transmitted continuously and simultaneously. This is achieved by employing a carrier wave (90 to 95 Mc/s) amplitude-modulated with up to six audio tones, the central frequencies of which are spaced between 550 and 15,000 c/s; the intelligence is then transmitted by varying the frequency of each tone about its mean value.

M.L. An exhibit in the outdoor equipment park revealed that M.L. Aviation, Ltd., are the manufacturers of the complete launching trolley for the Bloodhound surface-to-air weapon.

As owners of the ground on which the S.B.A.C. show is held, and customers and sponsors of virtually all our guided weapons, the **Ministry of Supply** can choose from an immense variety of new developments in selecting exhibits. Their display items were described on August 30, but the following text serves to explain the CTV-5 moving-wing servo display (drawing, page 446), which had a geometry apparently similar to that of Bloodhound:—

"This exhibit is a typical example of equipment designed and manufactured in R.A.E. for use as a research tool in a test vehicle. The servo ring contains four 10 h.p. electro-hydraulic servos operating at oil pressures up to 4,500 lb/sq in, each of which operates a wing surface. The servos can be operated independently and the design provides for the wing surfaces to be easily changed to facilitate the use of different wing forms. The oil supply system can either be of the total loss system shown or a circulating pump system for short and long flight durations respectively. The servos are of the single stage type and are



A wide range of accessories—chiefly turbo-alternators—on the D.H. Propellers stand.

noteworthy in respect of the high working pressures and the high power output obtained from a single stage of hydraulic amplification. Principal data: stall torque, 3,500 lb-in; load inertia, 200 lb-in²; design operating pressure, 3,800 to 4,500 lb/sq in; maximum speed of response, 1,200 deg/sec."

Muirhead Most important of the miniature guided-weapon products by Muirhead and company, the "size 8" units have been widely accepted, and were originally designed to M.o.S. requirements. They are the smallest of a wide range of 400 c/s synchro units manufactured to MIL specifications. One of the new miniature units is the control transmitter, Type 26V08CX4(B); weighing 2 oz it measures 0.75in diameter by 1.343in long and has a peak error of 10 min of arc. The related control transformer is mechanically very similar and has the same angular accuracy.

Mullard have made the following statement regarding their work in connection with the de Havilland Propellers' Firestreak (they were not allowed to exhibit any "hardware").

"An essential part of the recently announced Firestreak air-to-air guided weapon, developed by de Havilland Propellers, Ltd., is an exceptionally sensitive infra-red photo-cell which is an essential part of the Firestreak detector eye. By detecting the heat radiated from the target this eye enables the weapon to home on its objective. Made to an initial target specification of the Royal Radar Establish-

ment, this cell has been the subject of intensive research by Mullard to bring it to a high state of perfection. Certain other items of associated equipment have also been developed by Mullard for the Firestreak. Some idea of the sensitivity of infra-red cells may be gauged from published figures which show that the heat from an electric fire can be detected some miles away by one of these devices.

"Another major contribution of the company for the defence programme is the supply of specially developed sub-miniature valves. Mullard have developed these highly specialized valves, which are made in large numbers for weapon control systems, particularly inside the guided weapons themselves. These valves, designed for efficient operation under the most exacting conditions, represent the highest standards of quality and reliability attainable, and are the outcome of continued and intensive research and development work over many years."

Illustrated on page 449, the power pack by **The Plessey Company** for guided weapons and test vehicles was one of the most interesting new developments to be seen. The following is the security-cleared statement on the unit:

"The power pack has been specifically developed for use in guided weapons and G.W. test vehicles for re-charging of servo hydraulic accumulators.

"It is a turbine driven unit, using isopropyl nitrate monofuel, combustion being initiated by a small electrically fired cart-

Two superb missiles by English Electric: left, the complete Thunderbird on its firing launcher; right, the recoverable vehicle (twice fired).

